C-pls file

ER/WM&I DDT

000111001

Source/Driver (Name & Number from ISP, IAG milestone, Mgmt Action, Corres Control, etc)

Closure # (Outgoing Correspondence Control #, if applicable)

Due Date

George S. Squibb IV GSS
Originator Name

G. D. DiGregorio
QA Approval

J E Law
J E for A. M Tyson
Contractor Manager(s)

D. C Shelton
Kaiser-Hill Program Manager(s)

Document Classification Review Waiver Per Classification office

T G. Hedahl
Kaiser-Hill Director

Document Subject KH00003NS1A

ELEVATED 30-DAY AVERAGES FOR PLUTONIUM AT RFCA POINT OF EVALUATION IN APRIL 1997 - AMT-072-97

July 14, 1997

Discussion and/or Comments.

The attached plan for source evaluation and preliminary proposed mitigating actions is provided in accordance with the Final Rocky Flats Cleanup Agreement (RFCA) (Attachment 5, §2 4(B)) under "Action Determinations " Specifically, this plan addresses the Site's June 17, 1997 reporting of elevated plutonium water quality results at the point of evaluation monitoring location above Pond B-1 (referred to as GS10) for the period April 13, 1997 through April 24, 1997 The RFCA requires reporting of "exceedances in Segment 5" and the submittal to CDPHE and EPA of "a plan and schedule for source evaluation for the exceedance, including a preliminary plan and schedule for mitigating action "

To meet the "within 30 days of gaining knowledge" RFCA requirement, the plan should be transmitted by the Department of Energy to the Environmental Protection Agency (EPA) and Colorado Department of Health Safety and Environment (CDPHE) by July 17, 1997 If you have questions regarding this transmittal please contact John Law at extension 4842 or Keith Motyl at extension 2172

GSS slm

cc
J E Law
A M Tyson
RMRS Records

ADMIN RECORD

DRAFT

Date

Mr Steven W Slaten
RFCA Project Coordinator
Department of Energy, Rocky Flats Field Office
P O Box 928
Golden, CO 80402-0928

ELEVATED 30-DAY AVERAGES FOR PLUTONIUM AT RFCA POINT OF EVALUATION IN APRIL 1997 - DCS-xxx-97

The attached plan for source evaluation and preliminary proposed mitigating actions is provided in accordance with the Final Rocky Flats Cleanup Agreement (RFCA) (Attachment 5, §2 4(B)) under "Action Determinations" Specifically, this plan addresses the Site's June 17, 1997 reporting of elevated plutonium water quality results at the point of evaluation monitoring location above Pond B-1 (referred to as GS10) for the period April 13, 1997 through April 24, 1997 The RFCA requires reporting of "exceedances in Segment 5" and the submittal to CDPHE and EPA of "a plan and schedule for source evaluation for the exceedance, including a preliminary plan and schedule for mitigating action"

To meet the "within 30 days of gaining knowledge" RFCA requirement, the plan should be transmitted by the Department of Energy to the Environmental Protection Agency (EPA) and Colorado Department of Health Safety and Environment (CDPHE) by July 17, 1997 If you have questions regarding this transmittal please contact Chris Dayton at ext 9887 or George Setlock at ext 4457

David C Shelton
K-H Environmental Compliance

DCS xxx

Attachment
As Stated

cc
J E Law, RMRS, Bldg T893A
K M Motyl RMRS, Bldg T893A

2

DRAFT

Date

Mr Steve Tarlton
CDPHE RFCA Project Coordinator
Colorado Dept of Public Health and Environment
4300 Cherry Creek Drive South
Denver, CO 80222-1530

ELEVATED 30-DAY AVERAGES FOR PLUTONIUM AT RFCA POINT OF EVALUATION IN APRIL 1997 - SWS-xxx-97

Dear Mr Tarlton

The attached plan for source evaluation and preliminary proposed mitigating actions is provided in accordance with the Final Rocky Flats Cleanup Agreement (RFCA) (Attachment 5, §2 4(B)) under "Action Determinations" Specifically, this plan addresses the Site's June 17, 1997 reporting of elevated plutonium water quality results at the point of evaluation monitoring location above Pond B-1 (referred to as GS10) for the period April 13, 1997 through April 24, 1997 The RFCA requires reporting of "exceedances in Segment 5" and the submittal to CDPHE and EPA of "a plan and schedule for source evaluation for the exceedance, including a preliminary plan and schedule for mitigating action"

To meet the "within 30 days of gaining knowledge" RFCA requirement, the plan is being transmitted by July 17, 1997 If you have questions regarding the attached plan please contact me at 966-4839

Steven W Slaten
RFCA Project Coordinator

SWS xxx

Attachment
As Stated

3

DRAFT

Date

Mr Tim Rehder, Manager
EPA RFCA Project Coordinator
United States Environmental Protection Agency
Region VIII
999 18th Street, Suite 500
Denver, Colorado 80202-2466

ELEVATED 30-DAY AVERAGES FOR PLUTONIUM AT RFCA POINT OF EVALUATION IN APRIL 1997 - SWS-xxx-97

Dear Mr Rehder

The attached plan for source evaluation and preliminary proposed mitigating actions is provided in accordance with the Final Rocky Flats Cleanup Agreement (RFCA) (Attachment 5, §2 4(B)) under "Action Determinations" Specifically, this plan addresses the Site's June 17, 1997 reporting of elevated plutonium water quality results at the point of evaluation monitoring location above Pond B-1 (referred to as GS10) for the period April 13, 1997 through April 24, 1997 The RFCA requires reporting of "exceedances in Segment 5" and the submittal to CDPHE and EPA of "a plan and schedule for source evaluation for the exceedance, including a preliminary plan and schedule for mitigating action"

To meet the "within 30 days of gaining knowledge" RFCA requirement, the plan is being transmitted by July 17, 1997 If you have questions regarding the attached plan please contact me at 966-4839

Steven W Slaten
RFCA Project Coordinator

SWS xxx

Attachment
As Stated

4

Plan for Source Evaluation and Preliminary Proposed Mitigating Actions for Walnut Creek Water-Quality Results (for April 1997)

1. INTRODUCTION

This plan for source evaluation and preliminary proposed mitigating actions is provided in accordance with the Final Rocky Flats Cleanup Agreement (RFCA) (Attachment 5, §2 4(B)) under "Action Determinations" Specifically, this plan addresses the Site's June 17, 1997 reporting of elevated plutonium water quality results at the Point of Evaluation (POE) monitoring location above Pond B-1 (referred to as GS10) for the period April 13, 1997 through April 24,1997 The RFCA requires reporting of "exceedances in Segment 5" and the submittal to CDPHE and EPA of "a plan and schedule for source evaluation for the exceedance, including a preliminary plan and schedule for mitigating action"

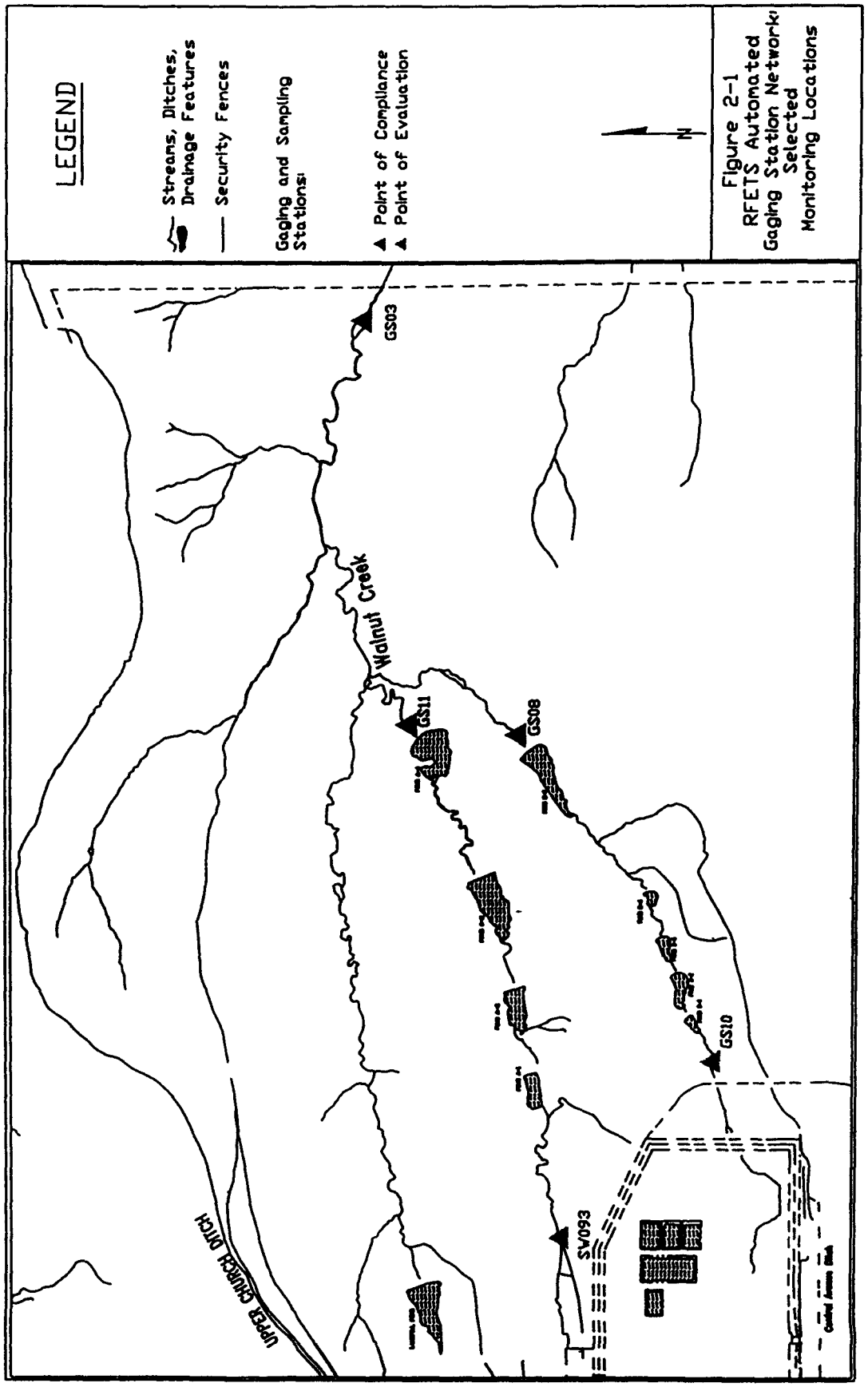
2. DATA SUMMARY

As specified in the draft Surface Water Integrated Monitoring Plan (SW IMP), Environmental Restoration's Water Management & Treatment (WM&T) evaluates 30-day moving averages* for selected radionuclides at Rocky Flats Cleanup Agreement (RFCA) POEs and Points of Compliance (POCs) Recent evaluations of water-quality measurements at POE surface water monitoring location GS10 (see Figure 2-1) show values above the POE Action Level value of 0 15 pCi/L plutonium GS10 is located on South Walnut Creek just upstream of the B-1 Bypass The B-1 Bypass diverts surface water around ponds B-1, B-2, and B-3 to Pond B-4 under normal operating conditions Results for available data at GS10 are summarized below in Table 2-1 and are also plotted in Figure 2-2

Table 2-1 Water-Quality Information from GS10: 10/1/96-5/11/97.

Location	Parameter	Date(s) Above 0 15 pCi/L	Date of Maximum 30-Day Average	Maximum 30-Day Average	Mean 30-Day Average
GS10	Pu-239,240	4/13/97-4/24/97	4/23/97	0 22	0 08

* The 30-day average for a particular day is calculated as a volume-weighted average of a 'window' of time containing the previous 30-days which had flow Each day has its own discharge volume (measured at the location with a flow meter) and activity (from the sample carboy in place that day) Therefore, there are 365 30-day moving averages for a location which flows all year At locations which monitor pond discharges or have intermittent flows, 30-day averages are reported as averages of the previous 30 days of greater than zero flow


LEGEND
Streams, Ditches, Drainage Features
Security Fences
Gaging and Sampling Stations:
Point of Compliance
Point of Evaluation
N
Figure 2-1
RFETS Automated Gaging Station Network: Selected Monitoring Locations
GS03
Walnut Creek
GS11
GS08
GS10
SW093
UPPER CHURCH DITCH

The analytical results for the composite samples collected around the period of interest have been confirmed A review of historical monitoring data shows that these results are not unusual Storm-event samples collected at GS10 from 1992 through 1996 (under pre-RFCA protocols) had an arithmetic average Pu-239,240 activity of 0 23 pCi/L with a maximum of 1 4 pCi/L The apparent trend upward during FY97 is likely due to seasonally increasing flow rates which carry increased suspended material To the best of our knowledge, during this time period no off-normal conditions were experienced at any Decontamination &Decommissioning or Environmental Remediation activities that could have affected water quality

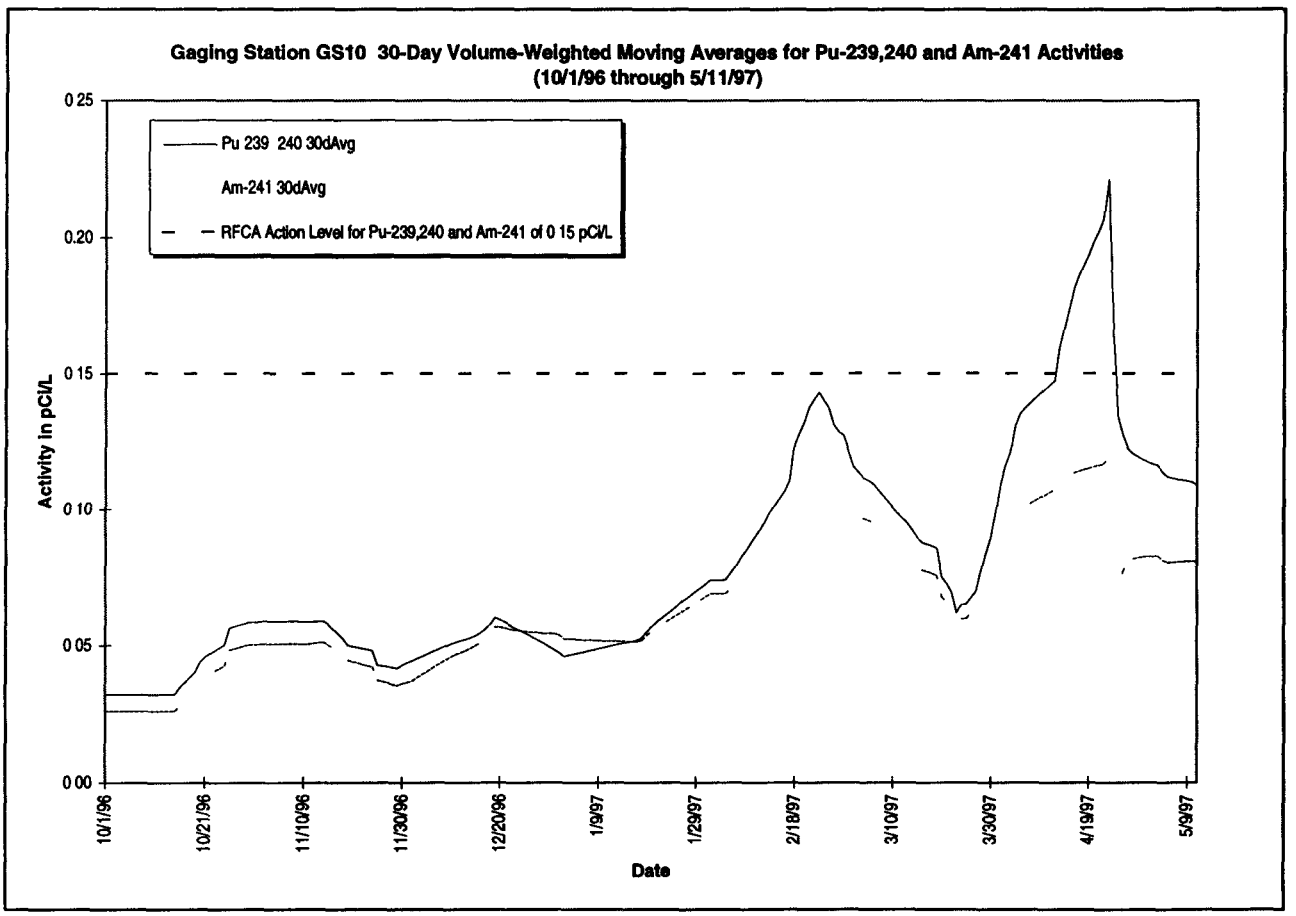


Figure 2-2

Downstream POC gaging station GS03 (Figure 2-1) monitors surface water passing the Site boundary in Walnut Creek at Indiana Street Water quality results from GS03 during the above period of interest yield 30-day moving averages which are not above 0 15 pCi/L Figure 2-3 shows the 30-day average and Table 2-2 summarizes available analytical results for GS03

Table 2-2 Water-Quality Information from GS03 for the Period: 10/14/96-5/8/97.

Location	Parameter	Date(s) Above 0 15 pCi/L	Date of Maximum 30-Day Average	Maximum 30-Day Average	Mean 30-Day Average
GS03	Pu-239,240	None	4/14/97	0 086	0 021
GS03	Am-241	None	4/14/97	0 030	0 015

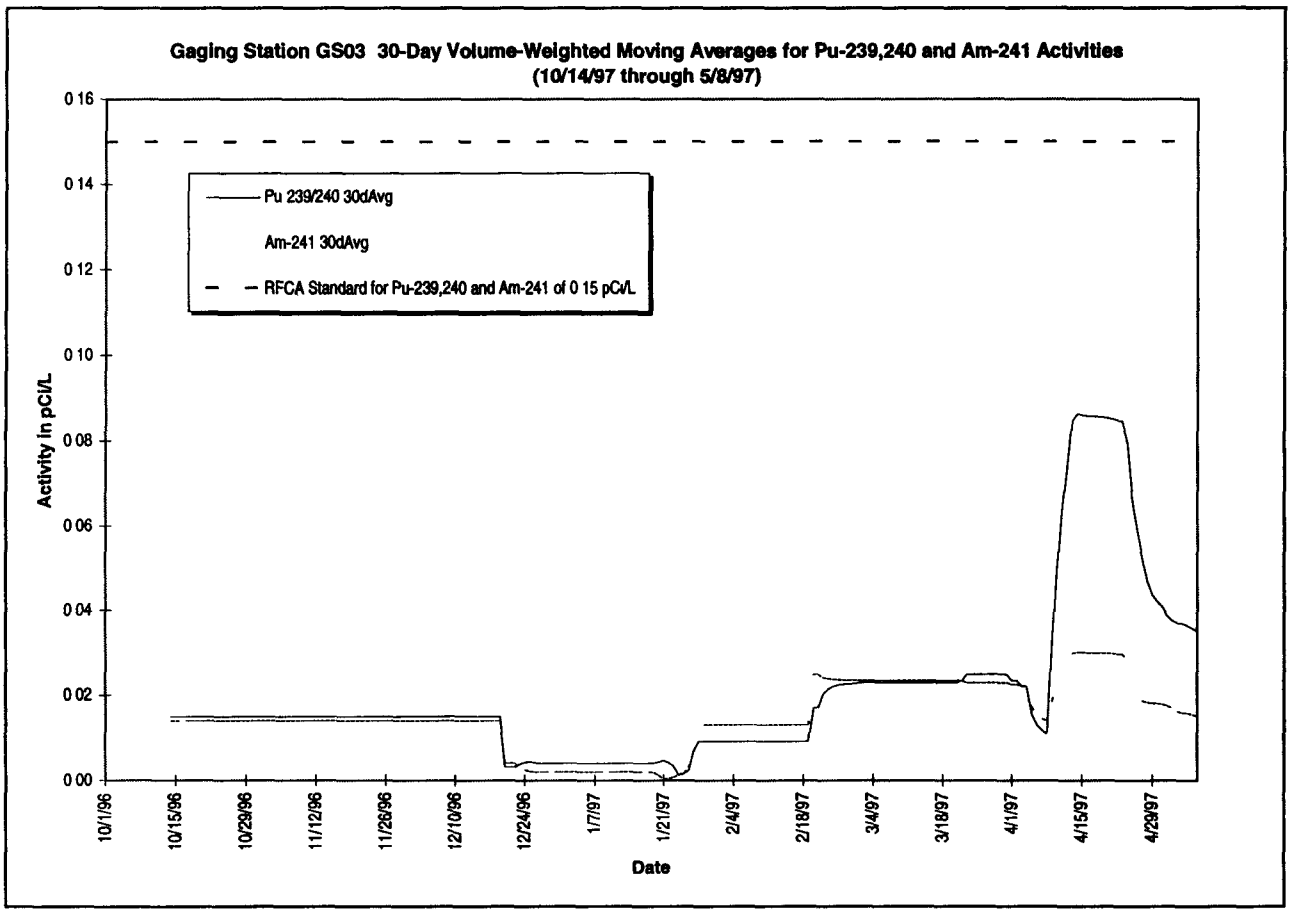


Figure 2-3

Although the 30-day average for Pu-239,240 at GS03 was well within the limits prescribed in RFCA, a composite sample collected for the period 4/8/97-4/13/97 had a Pu-239,240 activity of 0 22 pCi/L** Based on past analytical results for this location, this value is considered unusual, with historical measurements being well below 0 05 pCi/L*** Therefore, the Site has included source evaluation and possible mitigation for GS03 in this action plan

The unusual sample collected at GS03 was the final sample for the A-4 discharge from 4/3/97-4/13/97 Analytical results for three composite samples from POC gaging station GS11, which monitors controlled discharges from Pond A-4 (the terminal pond for Walnut Creek), show no elevated readings for Pu-239,240 or Am-241 for this discharge Table 2-3 summarizes these results (see footnote * on page 1)

Table 2-3 Summary of Analytical Data from GS11 for the April 3-13, 1997 Discharge.

Location	Parameter	Discharge Average	Maximum Sample Result
GS11	Pu-239,240	0 001	0 004
GS11	Am-241	0 005	0 008

3. SOURCE EVALUATION

This plan includes separate source evaluation actions for gaging stations GS10 and GS03 Source evaluations are required to determine the location, extent, and significance of areas which may have a detrimental impact on surface-water quality An Evaluation Report will be produced after completion of source evaluation activities Such actions will be incorporated into the ER ranking and Site prioritization systems if substantial costs are anticipated A preliminary discussion of potential mitigating actions that may be applied for both monitoring locations is included in Section 4 of this report

---

** Although the analytical results for this sample are considered valid, there were problems during collection Cold temperatures during the sampling period resulted in a frozen sample intake line, and some of the individual grabs were missed due to this condition Consequently, a low sample volume was collected for analysis, and the minimum detectable activity (MDA) reported by the lab was 0 02 pCi/L Pu-239,240 This MDA is somewhat higher than normal Additionally, the gaps in sampling mean that portions of the discharge were not sampled Regardless, the higher MDA and the missed grabs are not the cause of the elevated result It can not be determined that if no problems had occurred, the sample result would have been higher, or lower

*** Historical values can be obtained from the Site Annual Environmental Reports and the Quarterly Environmental Monitoring Reports

3.1 RFCA POINT OF EVALUATION GS10

3 1.1 Continuation of RFCA Monitoring

Flow-paced sampling at GS10 and SW022 (upstream of GS10) will continue as specified by the SW Integrated Monitoring Plan Future analytical information will be used to evaluate the significance of the current 30-day moving average values at GS10 This information may indicate water quality patterns which could provide insight into the causes of the current values being measured at GS10 These actions are discussed below

3.1.2 Evaluation for Potential Sources

Evaluation for potential sources includes assessment of existing data, identification of D&D / ER activities, a walk-down of drainage areas, the Site Actinide Migration Study, and possible installation of additional upstream monitoring locations

Assessment of Existing Data

Several sources of information, in conjunction with walk-downs, will be used to determine locations where source areas may exist and mitigating action could be beneficial These information resources are listed below

1 Surface water monitoring data,

2 Data generated by recent Site projects,

3 Gamma spectroscopy data,

4 Sediment quality data,

5 Soils data,

6 Historical Release Report information, and

7 State groundwater reports

Identification of D&D / ER Activities

A comprehensive list will be compiled to identify upgradient Site activities that were occurring just prior to or during the period of interest Scope of activity and associated constituents of concern will be evaluated for a potential impact to Site water quality Project-specific engineering and administrative controls in use will be identified and verified

Walk-Down of Drainage Area

Site personnel will perform a walk-down of the contributing drainage areas in an effort to identify source areas Conditions which might indicate a potential source area include the following items

1 Areas of concentrated fine sediments in drainage pathways,

2 Areas which contribute significant quantities of runoff sediment (e g , steep dirt roads, barren hillsides, and slopes needing revegetation),

3 Erosion on radionuclide-related IHSSs,

4 Position of radionuclide-related IHSSs in relation to storm water drainage pathways, and

5 Overall condition of storm drainage pathways

Actinide Migration Study

The Site is currently involved in a comprehensive two-year study to improve understanding of the behavior and transport of actinides (Pu, Am, U) in the environment A better understanding of actinide movement may provide insight into the origin and potential sources of these actinides Based on RFCA, the major goals of actinide migration studies are

1 Assess the long-term protectiveness of the actinide soil action levels on surface water,

2 Design remedial actions that minimize the environmental migration of actinides after Site closure and that will meet RFCA goals for surface water quality, and

3 Understand the main actinide environmental transport mechanisms in order to better understand the Conceptual Model (see Attachment 1 of the Path Forward for Actinide Migration, June 1997)

The Site will provide a summary of relevant findings from the Actinide Migration Study that are available at the time of the Evaluation Report

3.1 3 Installation of Upstream Monitoring Locations

After the source evaluations detailed above are completed, additional upstream monitoring locations may be proposed to further scrutinize the GS10 drainage basin Continuous or synoptic storm-event sampling may be considered to estimate mass transport to determine which sub-drainages may be contributing contaminants Water-quality information from sub-drainages may also indicate the degree to which source

areas are localized or wide-spread Initially, perhaps two to three locations might be considered as a first step to investigate the GS10 drainage basin

3.2. RFCA POINT OF COMPLIANCE GS03

3.2.1 Continuation of RFCA Monitoring

Flow-paced sampling at GS03 and the terminal ponds will continue as specified by the SW IMP Future analytical information will be used to evaluate the significance of the current 30-day moving average values at GS03 This information may indicate water quality patterns which lend insight into the cause of the anomalous value measured at GS03 for the period April,8 to April,13 1997 Since results at GS03 have been near detection for the last several years, subsequent analytical results could provide information about the significance of the value from this period

3.2.2. Evaluation for Potential Sources

Evaluation for potential sources for GS03 are the same as for GS10 except for the drainage walk-down as discussed below

Walk-Down of Drainage Area

Site personnel will perform a walk-down of the contributing drainage areas in an effort to identify source areas Since the sample of interest was collected during a period of little precipitation, and therefore limited overland runoff, evaluation will focus on streambeds and possible seeps Items of concern which might indicate a potential source area include the following items

1 Areas of concentrated fine sediments in drainage pathways,

2 Areas which contribute significant quantities of runoff sediment (e g , deeply incut streambanks, seeps contributing sediment),

3 Position of radionuclide-related IHSSs in relation to storm water drainage pathways, and

4 Overall condition of storm drainage pathways

Areas which are determined to be significant sources of sediment could then be sampled to assess the activity in the surface soils and sediments

4. PRELIMINARY PROPOSAL FOR MITIGATING ACTIONS

The following section describes general mitigating actions which may be employed to control or remove potential source areas Mitigation actions will be proposed in a Mitigation Plan should source evaluations prove conclusive These mitigation actions will be based on the results of the source evaluation actions Such actions will be incorporated into the ER and Site prioritization systems if substantial costs are anticipated

4.1 1 Modification in Reporting Protocols

Accurate Initial Reporting

Administrative controls will be evaluated and modified as needed to facilitate the expeditious release of information and better assure proper reporting

Presentation of Facts

Initial reports will be only factual in nature Analysis and interpretation will be reserved for subsequent reports and action plans

4 1.2. Modifications in Sampling Protocols

Although FY97 sample results are considered valid, certain modifications to sampling protocols will be implemented to further reduce the risk of cross-contamination and incomplete sample collection Implementation of new RFCA monitoring protocols are being phased in and refined throughout FY97, and modifications are expected

Winter Freeze Protection

If deemed appropriate, all POC gaging stations in Walnut Creek may be fitted with submersible heat tape/coils or other modifications to reduce the risk of freezing and subsequent gaps in sample collection Electrical systems will likely need to be upgraded at these locations to accommodate the increased power requirements Freeze protection for Woman Creek stations might also be considered, but the cost to run line power to GS01 (Woman & Indiana) would be significant The Site is currently preparing a scope and estimate document to provide guidance for the FY98 budget

Cross-Contamination Risk Reduction

Although FY97 sample results are considered valid, certain modifications to sampling protocols may be considered to further reduce the risk of cross-contamination The following modifications in protocol may be implemented

1 All sampling container lids will be stored in zip-lock bags at the monitoring location

2 All sample container washing tools will be categorized and segregated based on groupings of locations

4 1.3 Watershed Improvements

Interim erosion control measures ('watershed improvements') have continued at RFETS over the past two fiscal years in an effort to stabilize and entrap soils and sediments likely to be transported from the watershed by storm water runoff Installation of these measures is based on studies that indicate, when sources are available, radionuclides may associate with solids suspended in storm water Storm water data collected at the Site between 1991 and 1995 supports this conclusion Based on these characteristics of radionuclides and storm water, it is inferred that reducing particulate material from storm water runoff should reduce radionuclide loading from the water As outlined above, drainage areas targeted for control measures (source areas) are those locations identified as most likely to contribute material that could provide a transport mechanism for radionuclides in Site runoff

Four types of watershed improvement measures can be implemented Two hydraulically-applied erosion control products can be utilized (SoilGuard® and TopSeal®), silt fences or catch basins can be installed to capture sediments suspended in runoff, and overgrown vegetation can be removed to improve the flow capacity in a channel

4.1 4. Physical Source Removal

If a source is localized or discrete enough to be considered a 'hot spot', ER personnel could physically remove the contaminated soils or sediments These sources would then be containerized for storage and disposal

5. DELIVERABLES

5 1. SOURCE EVALUATION REPORT

An Evaluation Report will be produced after completion of source evaluation activities The source evaluation activities will be completed in two phases Phase I will include current existing monitoring data Phase II will include collection and evaluation of additional monitoring data The scope of Phase II will depend partly on the results from Phase I, and may include upstream gaging stations for GS10 and soil/sediment samples for GS03 as discussed in Section 3 of this report Such actions will be incorporated into the ER ranking and Site prioritization systems if substantial costs are anticipated A schedule is included in Section 6 of this report

5.2. MITIGATING ACTION(S) PLAN

Mitigation actions will be proposed in a Mitigating Action Plan should source evaluations prove that mitigation would be effective in improving water quality If source evaluations prove inconclusive, additional evaluation might be considered Mitigation actions will be targeted and designed based on the results of the source evaluation actions Such actions will be incorporated into the ER ranking and Site prioritization systems if substantial costs are anticipated A schedule is included in Section 6 of this report

6. SCHEDULE

Deliverable	Completion Date
Evaluation Report Phase I	September 30, 1997
Evaluation Report Phase II	March 1, 1997
Mitigating Action Plan	April 15, 1997